Drexler,
"HYPERTEXT: 1Ao
Prospects in a Nutshell"
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HYPERTEXT:

The prospects in a nutshell

Information systems affect society, government, business, and the growth of knowledge. A new system for handling text promises a revolution.

Today's media have a major shortcoming: none is well suited to handling complex, long-term, many-sided discussions. Broadcasting is ephemeral, centralized and superficial; print is either centralized, slow, or of small circulation; telephone and letter reach few at a time. Electronic text media could change this, but haven't. Existing databases are fast, and some have the depth and permanence of print, but they remain centralized, a sort of text-broadcasting.

An ideal medium for many purposes would not only hold text and graphics, but would allow readers to follow a reference by pointing to a note and tapping a button, instead of clambering around in a library building. It would let readers follow references not just from, but to part of a document, not by searching every piece of paper in the world, but again by pointing and touching a button. Finally, it would let any user write documents and comments, make alternate versions of public documents, publish reference links between any two documents, and make underlined and annotated versions for private use. Such a system--far more flexible than paper text--has been named hypertext.

A hypertext network could handle such routine chores as electronic mail, files, and so forth; its novelty would lie chiefly in its ability to maintain links across an ever-broader universe of evolving, multiple-versioned documents. In making available relationships seen by people, it would resemble human associative memory--but open to and shaped by a growing number of users. Links between related material (of different emphasis, viewpoint, and level) would make hypertext an ideal medium for learning by browsing. Further, users could find others with similar interests through their links to documents of common interest; the system would in effect link people.

A hypertext system need not be vast to be useful. An isolated unit could serve a writer, scientist, or engineer as a file system integrated with word-processing software. On a small network, it could handle electronic mail and files for a corporation--but with a difference: where ordinary files hide text in a box, hypertext would make open files accessible to all through links to related material. Hypertext could help represent the complex relations among letters, memos, policy statements, financial projections, suppliers, specifications, drawings, orders, and customers --and could make them useful.

On a large network, and with automatic royalties to authors, hypertext would be the natural medium for a world electronic library. Unlike existing databases, hypertext would allow many competing "guides to the literature," indexes in the form of documents linked to many others.

Picture debate on a topic you care about, whether environmentalism, space, arms control, or company policy. Think of the falsehoods and rumors one could expose with a sentence and reference; in hypertext, falsehoods could be publicly labeled. Think of the points you could make, now heard only by your spouse or office mate; with hypertext, you could publish a line or an essay in minutes. Think of the claims you have wanted to see referenced; with hypertext, you could see if the author has evidence to cite.

As hypertext becomes widely used, seeing whether anyone has noted a hole in an argument will become easy--just point, and ask for refutation-links. This will sharpen criticism, speeding the evolution of ideas through variation and selection. Further, the ability to see holes will bring the profound (but subtle) ability to see the absence of known holes in ideas. Today, this would take an exhaustive literature search; with hypertext, the absence of sound criticism would be easy to see. More rapid destruction of bad ideas will thus help the survivors--the sound ideas--gain attention and confidence more swiftly.

How important will it be to reduce the labor of following a reference by several orders of magnitude? Perhaps as important as reducing the labor of making a book by several orders of magnitude--and the Gutenberg revolution helped replace feudal monarchies with industrial republics based on a literate citizenry. Anyone who thinks society is dangerously slow in responding to opportunities and dangers should consider how hypertext could help. In a time of technological turbulence, when survival may hinge on our ability to evaluate complex facts swiftly and accurately, a working hypertext system could make the difference.

Status of the System

A software system that meets these specifications (and more) has been designed--and much of it demonstrated on a Sun Microsystems machine--by the Xanadu (tm) hypertext group. Their algorithms, based on novel data structures, yield a system that will remain fast as the amount of stored data grows arbitrarily large. They seek venture capital to speed development of a preliminary system for business use. They may be reached at (313) 663-3637.

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